

6.3 Maritime Transport and Harbours

Two major commercial ports are located on the coast of KZN. The Port of Durban developed in the lagoon area commonly known as the Bay of Natal, and has been operating as a harbour for some 170 years. The Port of Richards Bay, situated approximately 87 nautical miles northeast of Durban (and 252 nautical miles southwest of Maputo), was developed from a virgin site on the Mhlatuze River delta in the 1970s. There are also vestiges of a former port development in Port Shepstone, at the mouth of the Mzimkhulu River, but commercial port operations in that area were short-lived, and the port was de-proclaimed in the early 1900s.

The two existing KZN ports play out very different roles in meeting the needs of regional seaborne commerce, although

in their respective roles, both ports dominate the southern African port landscape. Each may lay quite compelling claims to be viewed respectively as the leading multi-purpose general cargo or liner port and the leading diversified dry-bulk port in the Indian Ocean region, or indeed in the southern hemisphere.

The national importance of the Ports of Durban and Richards Bay is clear. Richards Bay is the leading port in terms of cargo handled, while Durban leads on the basis of containers handled, ship calls and the aggregate tonnage of vessels using the port. The combined performance of the two ports accounts for 63% of total cargo handled, 62% of container-handling activity, 51% of ship calls in terms of numbers of callers and 62% of related vessel tonnage in South Africa.

Port of Durban.



Photo: Kierran Allen

Activities of the eight commercial ports administered by the Transnet National Ports Authority (TNPA) of South Africa^{1,2}

Port	Total cargo handled (million tons)	Containers handled (TEUs)	Ship calls (number of vessels)	Tonnage of calling vessels (million grt)
Richards Bay	86.63	18 540	1 800	63.11
Durban	80.76	2 712 975	4 273	129.64
East London	2.61	56 060	298	7.42
Ngqura	7.11	523 597	377	14.48
Port Elizabeth	11.86	326 313	1 211	26.01
Mossel Bay	1.92	-	1 081	2.80
Cape Town	13.88	755 306	27 82	49.84
Saldanha	59.70	-	534	32.30
Total	264.47	4 392 791	11 979	311.60

The Port of Durban

(Latitude 29° 52'S and Longitude 31° 02'E)

The development of the Port of Durban is essentially a 20th and 21st Century phenomenon, although some quite basic port activities were present from the mid-19th Century, when it operated largely as a subsidiary “feeder” port to the mainstream Cape ports.

The principal factor constraining the development of significant port facilities was the semi-permanent siltation of the port entrance, due to the littoral drift of beach sand up the coast. The “Battle of the Bar” was only won (partially) when modern dredging techniques were harnessed in the late 19th and early 20th centuries, to a point where port access by the largest vessels then in operation was secured from 1904 onwards.^{3;4;5} Thereafter, development and expansion of the port proceeded apace, and by the second decade of the 20th Century Durban was handling more traffic than the combined total of the Cape ports.³

The present port area, which occupies roughly 1875 ha, includes a water area of 892 ha at high tide¹ and 983 ha of land within the port limits.² Port facilities have been established in five distinct locations bounded by the Bluff in the east, by the Point and the city's CBD in the north, by the Maydon Wharf/Bayhead area to the west, and by the Fynnlads/Island View area to the south. This latter was the last to be developed and accommodates the container terminals that represent the commanding heights of the modern port. The overall port complex associated with these

areas provides an effective total of 59 berths for cargo-working or transit vessels, plus ship-repair berths, a graving dock, two floating docks and facilities for fishing trawlers and smaller commercial and recreational boats.

A further major facility lies outside the inner port area, in the form of the offshore Single-Buoy-Mooring (SBM) located off Isipingo. This facility, which came on stream in the early 1970s, is the national gateway for crude oil imports, handling some 20 million tons annually, and accommodating tankers that are too large and deep-draughted to be handled in the Bay of Natal.

Some significant areas within the Bay of Natal are occupied by commercial waterfront activities, including the “soft” waterfront of the city's CBD, which is largely occupied by recreational boating marinas and mixed-use recreational sites. More importantly, the last remaining vestiges of the once-extensive mangroves are found in a heritage site within the Bayhead area. The adjoining Silt Canal, into which the canalised waters of the Umbilo and Umhlatuzana Rivers flow, offers further sites for recreational boating, commercial fishing and mixed commercial land-side use.

The commodity base of traffic through the Port of Durban is substantially more diverse than that of any other South African or African port, with significant cargo-handling activity in all of the broad classes of liquid-bulks, dry-bulks, containerised or unitised general cargo, break-bulk and roll-on, roll-off cargo. This complex cargo matrix is, however, dominated by three major components: containerised cargo; crude oil and



petroleum cargo associated with the local refining industries; and automotive cargoes.

Containerised cargo is the paramount cargo type. The 2.7 million TEUs handled in 2011 amounted to a tonnage equivalent of some 36.6 million tons, or 45 per cent of the port's total traffic. Containerised cargo cannot be disaggregated into individual commodity types, but it also encompasses the high-value end of the cargo spectrum. The largest non-containerised import in volume terms is crude oil landed at the offshore SBM, while other significant imports are food grains, fully built-up vehicles, vegetable oil and chemical products. Principal non-container exports are more diverse and more typically associated with a developing economy. Notable commodities include maize, steel, vehicles from the local Toyota assembly plant and from other South African manufacturers, sized coal mined in northern KZN, forest products and palletised citrus fruit.

The diversity of port facilities and traffic types in Durban port has generated a complex set of interfaces between the public sector (Transnet) and the private sector, as well as a complex set of interfaces with the city and back-of-port areas within it. Transnet, through the National Ports Authority (TNPA) serves as a landlord and provider of basic marine and cargo infrastructure, while the physical cargo-handling terrain is shared between private terminal operators and Transnet Port Terminals (TPT). As a broad rule of thumb, Transnet entities control the container and automotive trades, while private terminals are responsible for the majority of dry-bulk and liquid-bulk operations, including the oil trades.

In the container trades in particular, vessel deployment characteristics have changed significantly, with a substantial increase in container ship sizes.^{6,7} The Port of Durban's response to the need to accommodate longer, beamier and deeper-draught container vessels was to embark on a substantial capital project to widen and deepen the main port fairway, by removing and reconstructing the old north breakwater groyne some 120 m further north, in the process widening the effective ship channel from 120-220 m, and deepening the channel from -12.8 m to -16 m. This work was conducted between 2007 and 2010.

It has become abundantly clear that future traffic growth cannot be accommodated by the existing infrastructure and facilities of the Port of Durban, and a long-term debate has ensued around the optimal way forward to expand waterfront as well as back-of-port capacity.^{2,8} The site for expansion is to

be the old Durban International Airport (DIA) location in the South Durban Industrial Basin. Transnet has acquired the land from the Airports Company of South Africa (ACSA), and proposes to construct a "dig out" port basin in this area. This will result in the establishment and operation of two separate port sites in the same metropolitan area, with the need to cut the coastline at a second location in order to provide the breakwaters and entrance channel.

Construction is to proceed in four phases, with capacity coming on stream from 2019-2037 with the principal focus of the proposed port on container handling. A new port at this site would also change the nature of Durban's port/back-of-port dynamics to a considerable extent, by redirecting traffic away from the saturated immediate hinterland of the present port facilities, and linking the port more efficiently to road and particularly rail corridors.

The Port of Richards Bay

(Latitude 28° 48'S and Longitude 32° 02'E)

Interest in the development of a port site on the north coast of KZN pre-dates the official opening of the Port of Richards Bay, on 1 April 1976, by well over a century. As early as the mid-19th Century, Voortrekker settlers in the province expressed an interest in accessing a port other than Durban. In the early years of the 20th Century the port engineer of Durban conducted a detailed survey of the Richards Bay lagoon, determining that this was a better site than others on the north KZN coast, such as Kosi Bay, and also that it offered better long-term prospects than Durban.⁹ The advantages of Richards Bay include the ease of dredging to permit port access by loaded Cape-sized bulk carriers, the availability of land for back-of-port developments and port-related industries, and the proximity of the site to the Mpumalanga coalfields and the industrial and market heartland of Gauteng. Transnet undertook the largest single, consolidated infrastructural project in South Africa at the time, which included the construction of both the port itself and the associated high-capacity 525 km Richcor rail link, linking the port to the coal-mining areas of Mpumalanga.^{9,10}

Although coal has always been the principal export of the port, Richards Bay was envisioned to be a port with a broader traffic base. The port was designed with the intention of effecting a clear physical separation between "dirty" bulk cargoes such as coal, and other "clean" dry-bulk and neo-bulk cargoes. The coal terminal was established on the south-

eastern side of the lagoon, in the area known as Die Duine, while berthing infrastructure and facilities for clean bulk cargoes were developed on the northern and north-western perimeter. The initial development phase of the port provided for a further separation of the commercial port areas of the lagoon from the ecologically sensitive Mhlathuze delta (the Kabeljou mudflats) to the south. The separation is effected by a berm wall or levee, leaving a nature reserve area of some 1 400 ha.¹¹

From its inception, the port was designed as a deep water export main gate, with 19 m in the port fairway and alongside principal berths, to permit access by fully laden bulk carriers. These vessels remain the mainstay of the port's coal export trade. Since its initial development phase, both the quay wall infrastructure and the shore side facilities of the port have expanded significantly, to a point where the port now offers 21 berths, catering for a broad base of cargo and vessels. In its present configuration the port has a water area of 1 496 ha and a landside area of 2 455 ha within port limits.²

As in Durban, Transnet/private interfaces are complex. The TNPA is responsible for marine and cargo infrastructure and marine services. Cargo terminal operations are shared between private enterprise, which operates the largest single coal-export facility in the world (the Richards Bay Coal Terminal or RBCT), a woodchip terminal, and an export facility for liquid-bulk acids, and TPT, which is responsible for the lion's share of the cargo-handling operations in the multi-purpose and dry bulk terminals.

The Port of Richards Bay is essentially a dry-bulk and neo-bulk port, albeit with a wide cargo base in both these categories. Total cargo handled in 2011 amounted to 86.7 million tons, a level that has remained broadly stable over the last five years. Cargo shipped exceeds cargo landed by 18:1. Of the quite limited range of imported commodities, the two principal items are metallurgical or coking coal (1.7 million tons in 2010/11) and alumina (1.4 million tons). The latter is the major raw material used in the aluminium smelting industry located in the port's industrial enclave. Exports remain dominated by coal (just short of 60 million were shipped in 2010/11).¹ Other major exports include ferro-alloys and chrome ore; woodchips; titanium slag and other mineral

sand products from Richards Bay Minerals' dune mining operations; other ores and minerals; pig iron, steel and base metals; and liquid-bulk acids and chemicals.

Potential future expansion of the Port of Richards Bay is unlikely to affect the KZN coastline directly, except for the potential deepening of port approaches and access channels. Development of further quay wall infrastructure and additional harbour basins is likely to follow a westward expansion path, constrained by the N2 freeway and the John Ross Highway to the north, and by the environmentally-sensitive mudflats to the southwest.

Based on their infrastructure and facilities, the two ports on the KZN coast should be seen as offering essentially complementary, rather than competing, services. This is unlikely to change significantly in the near future, as Durban strengthens its role as a general cargo (mainly containerised), liquid bulk and automotive port; while Richards Bay will continue to serve the needs of the bulk trades, through increased coal volumes, particularly if additional exporters that are presently largely excluded from the RBCT gain access to export facilities, and through greater tonnages of a widening diversity of other bulk cargoes, some migrating from Durban. Together, the two ports are also almost certain to continue to dominate South African seaborne commerce into the future. ■

Port of Richards Bay.



Photo: ORI

